

REMARKS

This amendment responds to the office action mailed March 15, 2003. Applicant thanks the Examiner for withdrawing the sequence election requirement of the June 3, 2003, Restriction Requirement, and agreeing to examine SEQ ID Nos: 1, 2, and 3 in the context of Group I.

After entry of this amendment, the pending claims under consideration are: claims 1-9, and 11-31.

Claims Rejected Under 35 U.S.C. § 112 1st Paragraph

The Examiner rejected claims 1-31 under 35 U.S.C. §112 1st Paragraph as not being enabling for “any crystal of LuxS in crystalline form and the method of making any LuxS crystal thereof.” Applicant respectfully requests that the Examiner withdraw this rejection. In the present invention, Applicant has shown that LuxS may be crystallized. Applicant has provided numerous examples in the specification of making LuxS crystals from various species, including, as noted by the Examiner, *H. pylori*, *H. influenzae*, and *D. radiodurans*. Applicant has provided examples of specific conditions used to obtain LuxS crystals (e.g., at pages 32-33, as noted by the Examiner), as well as examples of how the conditions may be varied (e.g., at pages 32-34), to obtain crystals. By following the teachings of the specification, one of ordinary skill in the art, without undue experimentation, would be able to obtain crystals of LuxS from other species.

In addition, the Examiner cited claims 11-14 as reciting particular unit cell dimensions, and not being directed to specific SEQ ID NOs indicated in the specification. Applicant respectfully contends that the present invention is not limited by the specific sequences exemplified by the SEQ ID Nos, nor is it limited by the specific exemplified species. Modifications to the particular LuxS sequence used that result in crystals having the unit cells of claims 11-14, are within the scope of the present invention. For purposes of expediting prosecution, Applicant has amended claims 11-14 to also refer to the specific species used to obtain a LuxS crystal characterized by the cited unit cell dimensions. Applicant therefore respectfully requests that the Examiner withdraw the rejection of claims 1-31.

Claims Rejected Under 35 U.S.C. § 112 2nd Paragraph

The Examiner rejected claims 3, 6, 8, 10, 34, 37, and 39 under 35 U.S.C. § 112 2nd Paragraph as indefinite. The Examiner rejected claims 3 (line 1) and 34 (lines 1-2) as reciting a vague and indefinite phrase limitation “diffraction quality.” Claim 3 has been amended to replace the term “diffraction quality” with the limitation that the crystal produces measurable diffraction to at least 3Å resolution. Applicant respectfully contends that this modification is not a narrowing amendment because, as the Examiner noted, the definition of “diffraction quality” crystal (see pages 18-19) comprises this at least 3Å resolution limitation. As claim 34 has been cancelled without prejudice to its further prosecution, this claim has not been amended.

The Examiner rejected claims 6 (line 1) and 37 (lines 1-2) as being vague and indefinite for reciting the phrase limitation “LuxS is a mutant.” Applicant has amended claim 6 to refer to LuxS mutants having LuxS activity. As claim 37 has been cancelled without prejudice to its further prosecution, this claim has not been amended. Applicant has also amended claims 7 and 8 so that they are dependent on claim 1 and not claim 6.

Selenomethionine and selenocysteine mutants are defined separately in the application at pages 17-18; conservative mutants are defined separately in the application at page 16.

The Examiner rejected claims 8 (line 1) and 39 (lines 1-2) as being vague and indefinite for reciting the phrase limitation “conservative mutant.” Applicant respectfully traverses this rejection. As noted by the Examiner, the specification defines conservative mutant. Applicant respectfully contends that one of ordinary skill in the art would not find the term “conservative mutant” vague or indefinite. Claim 39 has been cancelled without prejudice to its further prosecution.

The Examiner rejected claim 10 (line 2) as vague and indefinite for reciting the phrase “substantially similar.” Without conceding the appropriateness of this rejection, and without any reflection on the interpretation of the term “substantially similar,” Applicant has cancelled claim 10, without prejudice toward further prosecution.

In light of the amendments, cancellation, and arguments presented herein, Applicant respectfully requests that the Examiner withdraw the claim rejections under 35 U.S.C. § 112 2nd Paragraph.

Claims Rejected Under 35 USC § 102

The Examiner rejected claims 32-42 as being anticipated by Gronbech-Jensen et al., (U.S. Patent No. 5,553,004). Gronbech-Jensen, according to the Examiner, “describes a machine (i.e. computer) having memory capable of storing/containing data....” The Examiner states that limitations as to the type of data stored “are given no patentable weight as they are considered to be non-functional descriptive material.” For purposes of expediting prosecution of the present invention, and without conceding as to whether these claims are patentable or not, claims 32-42 are cancelled without prejudice to their further prosecution.

Claims Rejected Under 35 USC § 103

Claims 1, 3, 4, 6, 8, 15-23, and 25-31 were rejected by the Examiner under 35 USC § 103, as being unpatentable over Bassler et al. (U.S. Patent no. 6,559,176) taken in view of Crystal Screen™ (Hampton Research). The Examiner stated that Bassler “discloses various LuxS polypeptides,” and that the Bassler inventors state the “overproduction of LuxS proteins would allow one to make a quantity sufficient for crystallization.” The Examiner stated that Crystal Screen™ is a complete reagent designed to provide rapid a screening method for the crystallization of biological molecules (i.e. proteins, etc) and allows for the determination of crystallization conditions.” The Examiner stated that “it would have been obvious to someone of ordinary skill in the art at the time of the invention to practice Bassler et al. ...Lux S polypeptides...with Crystal Screen™, determination of crystallization conditions for a biological molecule (i.e. protein) and obtaining a crystal of a biological molecule.” Applicant respectfully traverses this rejection. Applicant is the first to obtain crystals of LuxS, and provides many examples of LuxS crystals from various species. Bassler does not teach or enable one of ordinary skill in the art to obtain LuxS crystals, nor does Bassler even suggest any means for obtaining such crystals. Further, Bassler does not teach, or even suggest, the use of Crystal Screen™ to obtain LuxS crystals. Thus there is no suggestion, or motivation to combine the two references. Even if Bassler were to have suggested the use of Crystal Screen™, to obtain such crystals, this would be merely an invitation to try, without any expectation of success, which is not the standard for obviousness (see In re Vaeck, 947 F.2d488, 493, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991). Moreover, a scientific manuscript related to this work by the inventor was published in a

prestigious peer-reviewed journal (Lewis, H.A., et al., Structure 9:527-37 (2001)). If crystals of LuxS were obvious, it is unlikely that this work would have been approved for publication.

The Examiner also rejected claims 1, 3-8, 15-23, and 25-31 as being unpatentable over Bassler, taken in view of Crystal Screen™ and further in view of Leonard et al. (U.S. Patent No. 5,700,660). The Examiner stated that Leonard “describes the method of substituting methionine residue or cysteine residue with a selenomethionine or selenocysteine.” Applicant respectfully submits that Leonard does not resolve the insufficiency of the Examiner’s *prima facie* case of obviousness based on Bassler and Crystal Screen™. Leonard does not teach, nor suggest, how to obtain LuxS crystals.

Applicants therefore respectfully request that the Examiner withdraw the rejection of claims 1, 3, 4, 6, 8, 15-23, and 25-31.

Information Disclosure Statement

The Examiner lined through several cited references because copies of the references were absent from the file. Applicant apologizes for any inconvenience this may have caused, and wish to call the Examiner’s attention to the fact that the law firm that had been handling this case is no longer in business. Applicant will review whether an additional IDS is needed. Applicant has enclosed a copy of the PCT International Search Report. Applicant believes that this search report is publicly available.

Objection to Disclosure

The Examiner objected to the disclosure because of embedded hyperlinks within the specification at page 44, lines 14, 16, and 21. Applicant thanks the Examiner for noting this informality, and has amended the specification accordingly.

CONCLUSION

In light of the above amendments and remarks, the Applicant respectfully requests that the Examiner reconsider this application with a view towards allowance. The Examiner is encouraged to call the undersigned attorney at (858) 558-4850, if a telephone call could help resolve any remaining items.

Respectfully submitted,

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